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were shot in June. Common in Concho County for two months in the fall.

126. *Contopus richardsonii*. WESTERN WOOD PEWEE.—Two shot in fall of 1886, in Concho County.

127. *Empidonax pusillus*. LITTLE FLYCATCHER.—Tolerably common summer visitant. Breeds. Young shot.

128. *Empidonax pusillus trailli*. TRAILL'S FLYCATCHER.—Spring migrant in the western half of Concho County, and I believe it breeds—a point I thought I had already ascertained, but as there may be some doubt, I cannot positively record it yet as breeding.

129. *Empidonax minimus*. LEAST FLYCATCHER.—Tolerably common summer visitant. Abundant in fall. Have shot young; no nests taken. Arrival noted April 27, 1885.

130. *Empidonax hammondi*. HAMMOND'S FLYCATCHER.—Fall migrant. Rare in Concho County; tolerably common in Tom Green County and the most abundant *Empidonax* across the Pecos River.

131. *Empidonax obscurus*. WRIGHT'S FLYCATCHER.—Rare fall migrant. Secured twice in Tom Green County.

132. *Otocoris alpestris arenicola*. DESERT HORNED LARK.—Abundant winter visitor. Arrives October 20; departs March 6. This is the only Horned Lark noted for either county. None occur in summer to my knowledge, although I have looked especially for them.

(*To be continued.*)

THE RED-HEADED WOODPECKER A HOARDER.

BY O. P. HAY.

THE Woodpeckers are eminently an insect-eating family, and their whole organization fits them for gaining access to situations where the supply of their normal food is perennial, if not always abundant. There are, however, in all probability, few members of the group that will not, when opportunities are offered, forego their accustomed animal diet and solace themselves on soft fruits and luscious berries; and when the blasts blow cold, and the soggy limb is frozen hard, and the larva no longer betrays its location by its industry, the few Woodpeckers of the species which brave our winters are, no doubt, glad to avail themselves of such dry forms of nutriment as grains, seeds of grasses, and the softer nuts.

Notwithstanding the many sagacious traits exhibited by birds, it is, to judge from the books, rather unusual for them to lay up

a store of food for a period of scarcity ; and yet it is probable that when we have thoroughly learned their modes of life many will be found to do this. One Woodpecker, *Melanerpes formicivorus*, a near relative of our Red-headed Woodpecker, has long been known as a hoarder of treasures, and an interesting account of its habits is given in Baird, Brewer and Ridgway's 'Birds of North America.' This species is accustomed to dig small holes in the trunks of trees, and to drive into each hole with great force a single acorn. "Thus the bark of a large pine forty or fifty feet high will present the appearance of being closely studded with brass nails, the heads only being visible." It has, by some, been denied that these acorns are collected for food ; and it is quite probable that many more are stored away than are ever eaten. It is even related that these birds sometimes hide away in trees collections of small stones. But there are evidences that sometimes, at least, the acorns are utilized. Instinct probably leads the bird to overdo the business of hoarding, just as human reason in a similar direction often misleads its possessors.

Our Red-headed Woodpecker betrays its kinship to the California species by the possession of somewhat similar habits. Its propensity for hoarding does not appear to have escaped the observation of many persons who make no claims to being ornithologists, and yet I find in no scientific work that I have been able to consult any notice thereof. Gentry, who describes minutely the habits of this species, says nothing about this trait. 'The Birds of North America' contains no statement concerning the food of the species ; and concerning the hoarding habits of the California Woodpecker they are spoken of as being "very remarkable and, for a Woodpecker, somewhat anomalous."

Along with the great abundance of grains and fruits of the past year, there has been, in Central Indiana at least, an immense crop of beech-nuts ; and the Red-heads have appeared to be animated with an ambition to make the most of their opportunities. From the time the nuts began to ripen, these birds appeared to be almost constantly on the wing, passing from the beeches to some place of deposit. They have hidden away the nuts in almost every conceivable situation. Many have been placed in cavities in partially decayed trees ; and the felling of an old beech is certain to provide a little feast for a bevy of children. Large handfuls have been taken from a single knot-

hole. They are often found under a patch of the raised bark of trees, and single nuts have been driven into the cracks in bark. They have been thrust into the cracks in front gate-posts: and a favorite place of deposit is behind long slivers on fence-posts. I have taken a good handfull from a single such crevice. That sharpest of all observers, the small boy, early discovered the location of these treasures. In a few cases grains of corn have been mixed with beech-nuts, and I have found also a few drupes apparently of the wild-cherry and a partially-eaten bitter-nut. The nuts may often be seen driven into the cracks at the ends of railroad ties; and, on the other hand, the birds have often been seen on the roofs of houses, pounding nuts into the crevices between the shingles. In several instances I have observed that the space formed by a board springing away from a fence-post, has been nearly filled with nuts, and afterwards pieces of bark and wood have been brought and driven down over the nuts as if to hide them from poachers. These pieces of bark are sometimes an inch or more square and half an inch thick and driven in with such force that it is difficult to get them out. In one case the nuts were covered over with a layer of empty involucres.

Usually the nuts are still covered with the hulls; but here and there, where the crevice is very narrow, these have been taken off and pieces of the kernels have been thrust in. An examination recently of some of these *caches* showed that the nuts were being attacked by animals of some kind. The Red-heads are frequently seen in the vicinity of these stores and they sometimes manifest great impatience at the presence of other birds. That other birds and animals of any kind disturb these *caches* I do not know, but it is quite probable that they do.

Since it might be questioned whether or not the Woodpeckers use for food the nuts thus stored up, I concluded to apply a test that would probably decide the matter. To-day (Jan. 7.), after the prevalance for sometime of severe weather, I shot two Red-heads and made an examination of the contents of their alimentary canal. In the gizzards of both were found considerable quantities of the more or less broken kernels of what appeared to the unaided eye to be beech-nuts. I then made microscopic sections of the pieces and compared them with similar sections of beech-nuts, and the two sets of sections were identical. The Red-headed Woodpecker certainly eats beech-nuts. In the giz-

zards there was also some kind of hard vegetable matter that I could not determine, and some coarse sand; but there were no remains of insects.

The laying up of such abundant stores of food for winter use, in so many places easy of access, and the precautions taken to conceal them, all show a high degree of intelligence in these birds.

The above observations were made in the village of Irvington, near Indianapolis, Ind.

ON THE AVI-FAUNA OF PINAL COUNTY, WITH REMARKS ON SOME BIRDS OF PIMA AND GILA COUNTIES, ARIZONA.

BY W. E. D. SCOTT.

With annotations by J. A. Allen.

(*Continued from p. 24.*)

137. *Coccothraustes vespertina*. EVENING GROSBEAK.—The only locality at which I met with this species was in the pine wood region of the Santa Catalina Mountains, November 26-29, 1884, as already noted. (See Auk, Vol. II, No. 2, p. 174, April, 1885.)

138. *Carpodacus purpureus californicus*. CALIFORNIA PURPLE FINCH.—During several years of collecting in the region under consideration, this species was not met with; and, therefore, I must assume that it is not of regular occurrence. But during the fall of 1885, beginning early in November, I found large flocks in the cañon near my house in the Catalinas. The first flock, noticed on November 11, was, as far as could be ascertained, composed of birds in immature plumage and mostly females. On November 30, I took a male in full plumage, the first I had noticed. All through December and January they were common in both phases of plumage, but a perceptible diminution of adult males was noticed early in February. About the middle of February the species began to disappear. This is the only point where I have noticed their occurrence. They fed almost exclusively on the ripe seed-balls of the sycamore, this season very abundant.

[Among the birds received from Mr. Scott are 12 adult males, 5 young males in the plumage of the female, and 18 females. These appear to differ in no appreciable way from California examples. Mr. Scott's